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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,581	11/24/2003	Nobuyuki Otsuka	61352-056	1697

7590 06/08/2005

McDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, DC 20005-3096

EXAMINER

JACKSON JR, JEROME

ART UNIT PAPER NUMBER

2815

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/718,581	OTSUKA ET AL.	
	Examiner	Art Unit	
	Jerome Jackson Jr.	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/23/04</u> . | 6) <input type="checkbox"/> Other: ____. |

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1- are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Moosburger et al.

Moosburger shows in figure 1 a ridge waveguide structure including a photonic crystal (PC) structure which does not overlap the ridge. There are electrical contacts to the upper and lower clads to enable laser emission. Although the contacts are not explicitly shown they are inherently there for the device to work, and therefore the claim structure is anticipated, or in the alternative, it would have been obvious to have electrodes along the ridge and at the bottom of the figure 1 structure to electrically pump the laser. Likewise, although Moosburger does not explicitly teach light radiating from a region of the photonic crystal (PC), light is reflected (radiated) from a region of the PC, and furthermore, the structure is capable of functioning in the manner of claim 1 because it possesses the same structure. See *In re Swinehart* 169 USPQ 226 where it was decided that functional language in claims drawn to structure do not distinguish the

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claims over prior art possessing the same claimed structure and inherent ability to perform the same function. It is applicant's burden to prove otherwise. Claim 1 is accordingly rejected.

Claims 2-4 are rejected as there are cylindrical convex or concave portions comprising the PC of Moosburger and they apparently extend from a portion of the upper clad of AIAs to the lower cladding layer.

Claim 6 is rejected as Mppsburger teaches a resonator width of 2 microns.

Claim 8 is rejected as these directions are ordinary in the art for lasing.

Claim 9 is rejected as there is a square lattice matrix of regions in Mossburger.

Claims 10 and 11 are rejected as the spacing is stated as equal, however, there is suggestion of variability to adjust for desired bandgap. See page 3501 last paragraph.

Claim 12 is rejected as the cleavage planes of the device define a "reflection film or structure".

Claim 13 is rejected as there is overlap of the ridge with the PC in figure 1.

Claim 16 is rejected as the wavelength is not particularly defined and thus any difference in spacing is obvious.

Claims 18 and 19 are rejected as MBE and etching is disclosed as fabrication.

Claims 1-6,8-13,16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moosburger in view of Sigalas '457.

Although Mossburger shows apparently cylindrical PC regions, other shapes are suggested and art equivalent, for example the convex or plate shaped regions shown in Sigalas. Claim 5 is obvious structure. In regard to claims reciting different spacing for

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the cylinders, Sigalas makes it clear that different parameters such as spacing, size, shapes, etc. are variable and design choice.

Claims 1-4,8-13,15,16,18,19 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lin '778.

Lin shows an electrically pumped edge emitter with PC reflectors at each end of a cavity. See figure 1. Claims 1-4, 8-13,15,16,18 and 19 are rejected as spacings, dimensions, etc. are variable as design choice.

Claims 1-16,18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin with Sigalas and Mossburger.

Sigalas teaches and suggests flat plate PC regions as art equivalent and advantageous. Mossburger suggests resonating guide widths of about 2 microns for low threshold lasing and common design. Lin shows that widths of 140nm can be used for small integration dimensions. Claim 7 is considered obvious as guide widths above and below the claimed 20-50 microns are shown to be useful and one of ordinary skill would consider the claimed widths to be a design choice without unexpected results. Claim 14 is considered obvious as Lin and Sigalas suggest lateral and horizontal confinement of the waveguide with PC regions.

Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin with Sigalas, Mossburger, and further in view of Noriaki '494.

Noriaki suggests two perpendicular lasing regions with a common reflector area to form a multiple wavelength source. From Lin, Sigalas and Mossburger it would have

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been obvious to have practiced a PC instead of a Bragg reflector to improve wavelength control. Claim 17 is obvious structure.

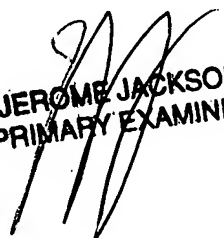
Labilloy is relevant art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson Jr. whose telephone number is 571 272 1730. The examiner can normally be reached on t-th 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571 272 1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jj


JEROME JACKSON
PRIMARY EXAMINER